

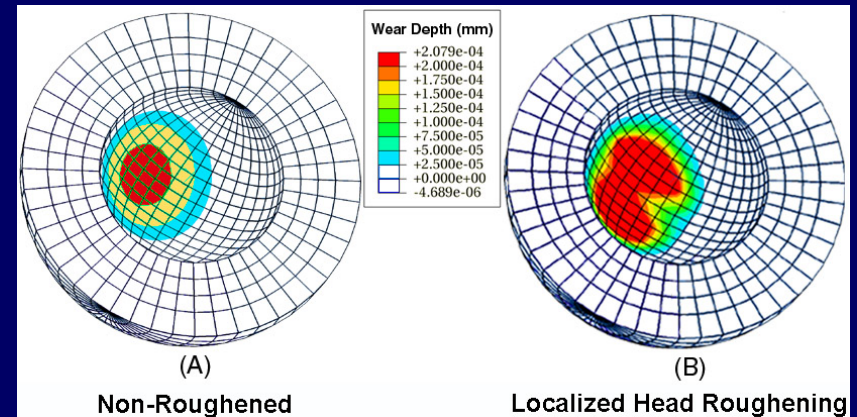
Nonlinear Computational Biomechanics of the Hip

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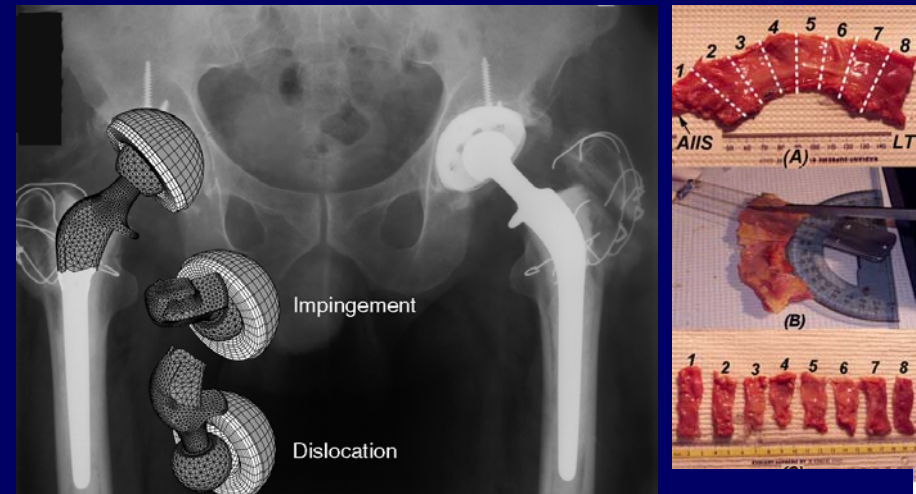
- **Wear of UHMWPE**

- Direction-dependent FEA sliding distance-coupled model of total hip wear



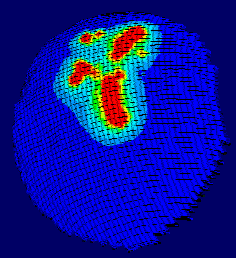
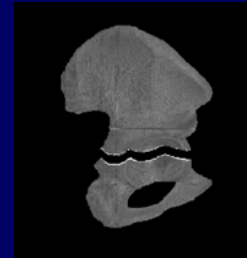
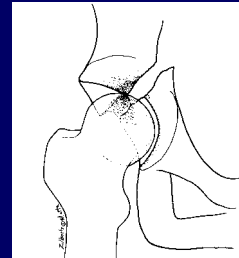
- **THA Dislocation**

- Capsule representation in a large-displacement sliding model of dislocation



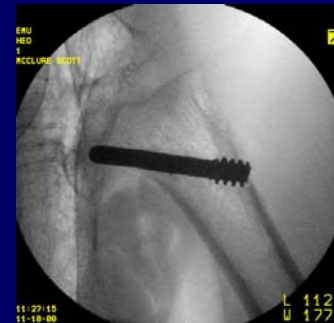
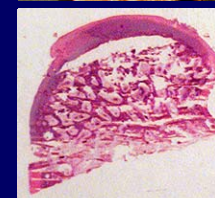
Central Acetabular Fractures

- Voxel-based patient-specific models of aberrant contact stresses
- Image analysis of injury severity (free surface energy of fragments)



Emu Model of Osteonecrosis

- Finite element & *in vivo* studies of a new implant to prevent femoral head collapse.



Developmental Hip Dysplasia

- Patient-specific FE contact models zoned from contrast-enhanced CT at 40-year follow-up

